



The passages below are followed by questions based on their content; questions following a pair of related passages may also be based on the relationship between the paired passages. Answer the questions on the basis of what is stated or implied in the passage and in any introductory material that may be provided.

Questions 7-19 are based on the following passages.

The following passages deal with the question of air pollution. Passage 1 gives a broad historical overview, and Passage 2 discusses one type of pollutant.

### Passage 1

Even before there were people, there were cases of air pollution. Volcanoes erupted, spewing ash and poisonous gases into the atmosphere. There were dust storms. Gases collected over marshes. When people appeared on the scene and began their conquest of nature, they also began to pollute the air. They cleared land, which made possible even larger dust storms. They built cities, and the soot from their hearths and the stench from their waste filled the air. The Roman author Seneca wrote in A.D. 61 of the "stink, soot and heavy air" of the imperial city. In 1257, the Queen of England was forced to move away from the city of Nottingham because the heavy smoke was unendurable.

The Industrial Revolution brought even worse air pollution. Coal was burned to power factories and to heat homes. Soot, smoke, and sulfur dioxide filled the air. The good old days? Not in the factory towns. But there were large rural areas unaffected by air pollution.

With increasing population, the entire world is becoming more urban. It is the huge megalopolises that are most affected by air pollution. But rural areas are not unaffected. In the neighborhoods around smoky factories, there is evidence of increased rates of spontaneous abortion and of poor wool quality in sheep, decreased egg production and high mortality in chickens, and increased food and care required for cattle. The giant Ponderosa pines are dying over a hundred miles from the smog-plagued Los Angeles basin. Orbiting astronauts visually traced drifting blobs of Los Angeles smog as far east as western Colorado. Other astronauts, more than 100 kilometers up, were able to see the plume of smoke from the Four Corners power plant near Farmington, New Mexico. This was the only evidence from that distance that Earth is inhabited.

Traffic police in Tokyo have to wear gas masks and take "oxygen breaks"—breathing occasionally from tanks of oxygen. Smog in Athens at times has forced factory closings and traffic restrictions. Acid rain in Canada is spawned by air pollution in the United States, contributing to strained relationships between the two countries. Sydney, Rome, Tehran, Ankara, Mexico City, and most other major cities in the world have had frightening episodes of air pollution.

### Passage 2

One of the two major types of smog—consisting of smoke, fog, sulfur dioxide, sulfuric acid, ash, and soot—is

called London smog. Indeed, the word smog is thought to have originated in England in 1905 as a contraction of the words "smoke" and "fog."

Probably the most notorious case of smog in history started in London on Thursday, 4 December, 1952. A large cold air mass moved into the valley of the Thames River. A temperature inversion placed a blanket of warm air over the cold air. With nightfall, a dense fog and below-freezing temperatures caused the people of London to heap coal into their small stoves. Millions of these fires burned throughout the night, pouring sulfur dioxide and smoke into the air. The next day, Friday, the people continued to burn coal when the temperature remained below freezing. The factories added their smoke and chemical fumes to the atmosphere.

Saturday was a day of darkness. For twenty miles around London, no light came through the smog. The air was cold and still. And the coal fires continued to burn throughout the weekend. On Monday, 8 December, more than one hundred people died of heart attacks while trying desperately to breathe. The city's hospitals were overflowing with patients with respiratory diseases.

By the time a breeze cleared the air on Tuesday, 9 December, more than 4,000 deaths had been attributed to the smog. This is more people than were ever killed in any single tornado, mine disaster, shipwreck, or airplane crash. This is more people than were killed in the attack on Pearl Harbor in 1941. Air pollution episodes may not be as dramatic as other disasters, but they can be just as deadly.

Soot and ash can be removed by electrostatic precipitators. These devices induce an electric charge on the particles, which then are attracted to oppositely charged plates and deposited. Unfortunately, electrostatic precipitators use large amounts of electricity, and the electrical energy has to come from somewhere. Fly ash removed from the air has to be put on the land or water, although it could be used in some way. Increasingly, fly ash is being used to replace part of the clay in making cement.

The elimination of sulfur dioxide is more difficult. Low-sulfur coal is scarce and expensive. The most plentiful fuel that exists is low-grade, high-sulfur coal. Pilot runs have shown that sulfur can be washed from finely pulverized coal, but the process is expensive. There are also processes for converting dirty coal to clean liquid and gaseous fuels. These processes may hold promise for the future, but they are too expensive to compete economically with other fuels at present. They also waste a part of the coal's energy.

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7. Passage 1 implies that air pollution
- (A) was originally caused by the Industrial Revolution
  - (B) affects only urban areas
  - (C) has natural as well as manmade causes
  - (D) will never be eliminated through the use of better fuels because they are too expensive
  - (E) seriously affects the nervous systems of both people and animals
8. The author of Passage 1 uses both the Roman author Seneca and the Queen of England (lines 9-13) as evidence that
- (A) civilization has necessarily caused air pollution
  - (B) air pollution has always existed in cities
  - (C) urban air pollution is not just a modern problem
  - (D) humanity disregards its environment
  - (E) recently, the level of air pollution has risen dramatically
9. According to the author of Passage 1, air pollution problems of today differ from those of the Industrial Revolution and before in that
- (A) remote communities may now feel the effects of air pollution regardless of their proximity to the source of the pollution
  - (B) today's polluted factory towns were once clean rural communities unaffected by urban air pollution
  - (C) modern urban areas are no longer more polluted than the suburban and rural communities that surround them
  - (D) the use of coal as fuel has greatly increased the number of cities and megalopolises that are contributing to the world's air pollutants
  - (E) modern disasters caused by incidents of extreme air pollution cause far more damage than they did hundreds of years ago
10. The orbiting astronauts are discussed by the author (lines 28-34) in order to
- (A) demonstrate the increased urbanization of modern civilization
  - (B) prove that air pollution is an inevitable consequence of human progress
  - (C) support the claim that pollution has become the defining characteristic of modern society
  - (D) provide evidence that pollution is no longer restricted to urban areas
  - (E) further the argument that large urban areas are most affected by air pollution
11. The last paragraph of Passage 1 suggests that air pollution causes all of the following EXCEPT
- (A) difficulties in international relations
  - (B) otherwise unnecessary closings of businesses
  - (C) changes in the quality of some water
  - (D) changes in work habits
  - (E) high levels of lung disease
12. The author of Passage 2 discusses the 1952 outbreak of London smog in order to
- (A) demonstrate that smog has serious effects that are not controllable by human action
  - (B) point out that air pollution is a major threat to human health only over a long period of time
  - (C) describe an example of the lethal potential of air pollution
  - (D) support the claim that air pollution must be controlled
  - (E) prove that the toxic effects of air pollution are far worse in Europe than in the United States
13. According to Passage 2, London smog can best be described as
- (A) a deadly type of air pollution that cannot be completely eliminated
  - (B) a phenomenon responsible for more deaths than from any other natural cause
  - (C) a threat to human health that we are often unaware of
  - (D) a combination of fog conditions and heavy accumulations of smoke from fossil fuel fires
  - (E) a new, mostly uninvestigated, type of air pollution
14. The statistics cited in lines 68-74 imply that
- (A) any effects of a serious air pollution episode cannot be seen until some time after the episode
  - (B) in the short run, air pollution produces more traumatic health problems than other disasters
  - (C) most of the fatalities from air pollution do not occur during an air pollution episode
  - (D) air pollution episodes can be among the most devastating types of disasters
  - (E) it is impossible to know the total death rate from a given episode of air pollution

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15. Passage 2 suggests that electrostatic precipitators work by a process in which
- (A) electricity is attracted to particles
  - (B) charged particles are attracted to plates with the opposite charge
  - (C) a large amount of electricity ionizes the air
  - (D) induction acts on charged particles
  - (E) ash and soot are naturally charged particles
16. The author of Passage 2 believes that the removal of sulfur dioxide from air pollution is difficult because
- (A) the technology to remove sulfur dioxide is only currently in development
  - (B) any successful process utilizes more natural resources than it produces
  - (C) sulfur is made up of very resilient molecules that cannot be broken down easily
  - (D) sulfur is a basic compound in all fuels that are currently used
  - (E) the available methods are costly and involve some waste
17. It can be inferred that the author of Passage 1 would agree with which statement about the cost of pollution control discussed in Passage 2 ?
- (A) Society must be prepared to spend whatever it takes to eliminate all forms of air pollution.
  - (B) The cost of pollution control is too high to make it economically efficient with current technology.
  - (C) The more we are concerned with limiting the effects of pollution, the less we will be able to eliminate the sources of pollution.
  - (D) Dealing with pollution can be a significant challenge for urban populations.
  - (E) The cost of pollution control is much higher than the cost of changing to better energy sources.
18. Which factor mentioned in Passage 1 most likely contributed to the environmental disaster described in Passage 2 ?
- (A) The Industrial Revolution
  - (B) Natural sources of air pollution
  - (C) Land clearing
  - (D) Heavy smoke from Nottingham
  - (E) Improper disposal of solid waste
19. Which of the following is NOT a difference that exists between the two passages?
- (A) Passage 1 views air pollution as a timeworn problem and gives historical contexts to show its permanence in human society past and present while Passage 2 focuses only on the modern era.
  - (B) Passage 2 focuses on the effect of air pollution on urban populations while Passage 1 discusses the effect it has had on both urban and rural areas.
  - (C) Passage 2 uses one historical example to illustrate the dangers of air pollution while Passage 1 uses several historical examples.
  - (D) Passage 1 recognizes the Industrial Revolution as a major factor in air pollution while Passage 2 contends that it was no worse than other factors.
  - (E) Passage 2 provides the reader with possible methods for preventing or treating polluted air while Passage 1 does not.

**STOP**

If you finish before time is called, you may check your work on this section only.  
Do not turn to any other section in the test.